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Finite gradings of Lie algebras

This is a joint work with Mercedes Siles Molina.

We show that the algebra $\mathrm{Der}(\mathrm{L})$ of derivations of a strongly nondegenerate Lie algebra L graded by an ordered group G with a finite grading (and satisfying a mild technical condition) inherits the grading from L, i.e. $\mathrm{Der}(\mathrm{L})$, which turns out to be a strongly nondegenerate Lie algebra, is G-graded and has the same support as L. We specialize the result when L is the Lie algebra of the form A^-/Z_A or K/Z_K, for A a semiprime associative algebra, K the Lie algebra of skew elements of a semiprime associative algebra with involution, and Z_A and Z_K their respectives centers.